

Table of contents :

1. **Introduction to Mechanical Engineering**
 - Scope and importance of mechanical engineering
 - Engineering systems and applications
2. **Engineering Materials**
 - Ferrous and non-ferrous materials
 - Material properties
 - Selection of materials
3. **Strength of Materials**
 - Stress and strain
 - Elasticity and plasticity
 - Hooke's law
 - Mechanical testing
4. **Thermodynamics**
 - Basic concepts
 - Laws of thermodynamics
 - Thermodynamic processes
 - Entropy
5. **Steam and Steam Boilers**
 - Properties of steam
 - Boiler classification
 - Boiler performance
6. **Steam Turbines**
 - Principles of operation
 - Types of turbines
 - Applications
7. **Internal Combustion Engines**
 - SI and CI engines
 - Engine components
 - Otto and Diesel cycles
 - Engine performance
8. **Air Compressors**
 - Types of compressors
 - Working principles
 - Performance analysis
9. **Fluid Mechanics**
 - Fluid properties
 - Pressure measurement
 - Fluid flow
 - Bernoulli's theorem
10. **Hydraulic Machines**
 - Pumps
 - Water turbines
 - Hydraulic systems
11. **Refrigeration and Air Conditioning**
 - Refrigeration cycles
 - Refrigerants
 - Air-conditioning systems

12. Manufacturing Processes

- Casting
- Welding
- Forging
- Machining operations

13. Machine Tools

- Lathe
- Drilling machine
- Milling machine
- Grinding machine

14. Power Transmission and Machine Elements

- Belts and ropes
- Chains
- Gears
- Bearings

15. Power Plants

- Thermal power plants
- Hydroelectric power plants
- Nuclear power plants
- Renewable energy systems